Claims

1. A method for producing a conditionally-immortalized human CNS progenitor cell, comprising:

(a) plating human progenitor cells on a surface that permits proliferation;

(b) adding growth medium to the cells;

(c) transfecting the cells with DNA encoding a selectable marker and regulatable growth-promoting gene under conditions promoting expression of the growth-promoting gene;

(d) passaging the transfected cells onto a substrate; and

(e) adding growth medium supplemented with one or more proliferation-enhancing factors to the transfected cells.

2. The method of claim 1 wherein said substrate is polyornithine/laminin, polylysine/laminin or a surface treated with fibronectin.

3. The method of claim 1 wherein said growth-promoting gene is an oncogene.

4. The method of claim 3 wherein said oncogene is selected from the group consisting of v-myc, N-myc, c-myc, p53, SV40 large T antigen, polyoma large T antigen, E1a adenovirus and E7 protein of human papilloma virus.

5. A conditionally-immortalized clonal human CNS progenitor cell capable of differentiation into neurons and astrocytes.

6. A method for producing astrocytes and/or neurons, comprising culturing a cell produced according to claim 1 under conditions inhibiting expression of the growth-promoting gene.

7. An astrocyte produced according to the method of claim 6.

8. A neuron produced according to the method of claim 6.

9. A method for producing astrocytes and neurons, comprising culturing a cell according to claim 5 under conditions inhibiting expression of the growth promoting gene.

10. An astrocyte produced according to the method of claim 9.

11. A neuron produced according to the method of claim 9.

12. A method for introducing a CNS cell into a mammal, comprising administering to a mammal a cell produced according to the method claim 1 or claim 6.

13. A method for introducing a CNS cell into a mammal, comprising administering to a mammal a cell according to claim 5.

14. A method for treating a patient, comprising administering to a patient a cell produced according to the method of claim 1 or claim 6.

15. A method for treating a patient, comprising administering to a patient a cell according to claim 5.

16. A method according to claim 15 wherein the patient is afflicted with a pathological condition where neurons have degenerated.

17. A method according to claim 16 wherein the pathological condition is selected from the group consisting of Alzheimer's disease, Parkinson's disease, amyotrophic lateral sclerosis, stroke and traumatic head injury.

18. A method for screening for an agent that modulates activity of a protein produced by a CNS cell, comprising:

(a) contacting a cell produced according to the method of claim 1 or claim 6 with a candidate agent; and

(b) subsequently measuring the ability of said candidate agent to modulate activity of a protein produced by said cell.

19. A method for screening for an agent that modulates activity of a protein produced by a CNS cell, comprising:

(a) contacting a cell according to claim 5 with a candidate agent; and

(b) subsequently measuring the ability of said candidate agent to modulate activity of a protein produced by said cell.

20. A method for detecting the presence or absence of a protein in a sample, comprising

(a) contacting a sample with a cell produced according to the method of claim 1 or claim 6; and

(b) subsequently detecting a response in said cell, and thereby detecting the presence of a protein in said sample.

21. A method for detecting the presence or absence of a protein in a sample, comprising

(a) contacting a sample with a cell according to claim 5; and

(b) subsequently detecting a response in said cell, and thereby detecting the presence of a protein in said sample.

22. A method for identifying a human CNS gene or protein, comprising detecting the presence of a gene or protein within a culture of cells produced according to the method of claim 1 or claim 6.

23. A method for identifying a human CNS gene or protein, comprising detecting the presence of a gene or protein within a culture of cells according to claim 5.

24. A method for screening for an agent that affects CNS cell death, comprising:

(a) contacting a cell produced according to the method of claim 1 or claim 6 with a candidate agent under conditions that, in the absence of candidate agent, result in death of said cell; and

(b) subsequently measuring the ability of said candidate agent to affect the death of said cell.

25. A method for screening for an agent that affects CNS cell death, comprising:

(a) contacting a cell according to claim 5 with a candidate agent under conditions that, in the absence of candidate agent, result in death of said cell; and

(b) subsequently measuring the ability of said candidate agent to affect the death of said cell.

26. A method for screening for a protein that regulates CNS cell death, comprising:

(a) altering the level of expression of a protein within a cell produced according to claim 1 or claim 6; and

(b) subsequently measuring the affect of said alteration on the death of said cell, and thereby identifying a protein that regulates CNS cell death.

27. A method for screening for a protein that regulates CNS cell death, comprising:

(a) altering the level of expression of a protein within a cell according to claim 5; and

(b) subsequently measuring the affect of said alteration on the death of said cell, and thereby identifying a protein that regulates CNS cell death.

28. A conditionally-immortalized human CNS progenitor cell produced according to the method of claim 1.

29. A cell according to claim 28, wherein said cell is present within a clonal cell line.

30. A cell according to claim 28, wherein said cell is capable of differentiation into neurons and astrocytes.

31. A cell according to claim 28, wherein said cell is capable of differentiation into neurons.

32. A cell according to claim 28, wherein said cell is capable of differentiation into astrocytes.